

APRIL/MAY 2023

**GECH14A/DECH14A — ADVANCED
POLYMER CHEMISTRY**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are thermosetting plastics?
2. What are fibers? Give any two examples.
3. Give any two commonly used initiators in anionic polymerization.
4. Define inhibitors. Give example.
5. Mention about the mechanical properties of polymers.
6. List some characterization techniques used to analyze polymers.
7. Sketch the preparation of nafion.
8. Enlist important applications of cellulose.
9. What are polymer nanocomposites?
10. Define electroluminescent polymers.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) How does a cross linked polymer differ from that a linear polymer?

Or

- (b) Write an account on the bulk polymerization.

12. (a) Discuss about cationic polymerization.

Or

- (b) Write a note on degree of polymerization.

13. (a) Illustrate the factors affecting the crystallinity.

Or

- (b) Explain relation between structure and mechanical properties.

14. (a) Outline the preparation and applications of PVC.

Or

- (b) Summarize the applications and structure of chitosan polymers.

15. (a) Discuss about the IPN polymers.

Or

- (b) Explain about biodegradable and biomedical polymers.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss the elastomers forming properties of polymers.

17. Illustrate free radical polymerization with mechanism using suitable mechanism.

18. (a) Discuss the factors affecting glass transition temperature.

- (b) How will you determine the molecular weight of a polymer?

19. (a) Sketch the preparation of TEFLON and list its applications. Explain.

- (b) Discuss in detail about ion exchange resins.

20. Define biopolymers. Discuss about the high temperature and fire-retardant polymers.